
Book Reviews

Reviewed by Luc Hens

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1 Unnatural Selection: How we are Changing Life, Gene by Gene?

by: Emily Monosson

Published 2015

by Island Press

2000 M Street, NW, Suite 650, Washington DC 20036, USA

8 Chapters, 187pp

Library of Congress Control Number: 2014939900

ISBN: 987-1-61091-498-7

Darwinian evolution is usually a slow process. It is about the transformation of life from single-cell organisms, over a variety of complex bodies with increasing complexity (as partially evidenced by fossils), to the life forms which live today. The ascent of man is an intriguing story starting from primitive primate, over a series of more direct ancestors, to modern humans. Evolution is driven by external pressures such as environmental changes and intrinsic responses such as resilience and adaptation. During the past 40 years, DNA analysis completed the traditional view on Darwinian evolution by documenting the often subtle to sometimes massive changes in the genetic material in a phylogenetic context.

This process of merely gradual, sometimes more sudden biochemical, histological and physiological changes over millions of years shows new elements during the Anthropocene. Humans change their environment, cause new pressures, and elicit previously unseen drivers of evolution. The use of pesticides introduces resistance to DDT and other 'plant protection' chemicals and biocides. Polar bears, minks, eagles and humans are at the top of their food chain and therefore vulnerable to the effects resulting from our polluting activities.

This book is about these new anthropogenic drivers of evolution. It explains how people are speeding up an evolutionary arms race both within and around us.

The text is structured in three parts, of which the first one entails five chapters dissecting the new pressures on evolution: antibiotics, vaccines, chemotherapy, resistance to pesticides, and resurgence of pests such as bedbugs. They are all situated in their historical context and their (possible/likely) impact on evolution.

The second part is the core of the book. It describes 'natural selection in an unnatural world'. This section not only specifies the title of the book, it also provides the keys to understand the mechanisms behind the new drivers of selection: the release of millions of chemical toxins since the industrial revolution, their evolutionary cost, and their impact on the planet as an ecological system. The consequences for evolution are also analysed in a separate chapter: speeding up the evolution and impacting its 'natural course' are discussed.

The last section of the book is about the effects of medical drugs, pesticides and pollution on epigenetics, the heritable changes in gene expression, without changes in the DNA sequence. Evidence increases that some environmental stressors leave their marks on plants and animals for generations by altering how and when genes are turned on and off. The author speculates that epigenetic changes may provide a most rapid source of variation within a single generation.

This is a remarkable book for different reasons:

- The subject is an eye-opener. The issues under discussion are not new, but their context is revealing.
- The book offers options for a more sustainable world: manage pests without creating superbugs, and protect individuals from disease without putting new epidemics on track.
- In a world where the denial of evolution is an increasingly popular idea, the book addresses inevitable questions on how the biological subjects evolved.

Although this book is about science, it adopts a style and a format which are different from scientific papers and rationales. Although an extended reference list is appended, there are no figures or tables. The book reads like a novel, using ample anecdotes and citations, while the author regularly addresses her reader directly. This provides the text with a vivid and convincing approach, rather than offering a neutral, analytical, descriptive analysis of facts. On many pages, the manuscript resembles more a pamphlet than a scientific dissertation. Overall, this motivating and engaging style is an attraction for the reader and a strength of the book.

This book should be read by anyone who cares about the environment in the Anthropocene. It is a most valuable addition to the Island Press publications addressing global environmental problems.

2 The Politics of Green Transformations

by: Ian Scoones, Melissa Leach and Peter Newell

Published 2015

by Earthscan from Routledge

2 Park Square, Milton Park, Abingdon,

Oxon OX14 4RN, UK, 11 chapters, 220pp

ISBN: 978-1-138-79289-0 (hbk)

ISBN: 978-1-138-79290-6 (pbk)

ISBN: 978-1-315-74737-8 (ebk)

Large environmental projects, such as implementing sustainable development, establishing a World Environmental Organization (as repeatedly called for during the UN conferences on environment and sustainable development), realising new energy use and production pathways in a context of climate changes, greening economic systems through pricing nature and other environmental assets, to list just these examples, require most impacting transformations of societies and the mechanisms they rely on. Most often the

technical aspects, and to a more limited extent the economic aspects, of these transitions have been (partially) described. The underlying hypothesis and at the same time the scope of this book is that the necessary policy aspects have been worked out less: questions of institutional change and policy, as well as more profound shifts in political power.

In the first chapter, the editors describe the elements constituting the politics of green transformations. Governance, political and green economy, green growth, accountability, stakeholder participation, visions, concepts and knowledge, techno-centric and marketed transformations, state-led (top-down) and citizen-led (bottom-up) changes, and multiple transformations are keywords characterising the discussion and describing its wide and diversified scope.

The ten chapters that follow explain different positions on these key elements of the politics of green transformations. There is no 'one-size-fits-it-all' approach; rather a diversity of strategies is described. They range from the role of science, over green transformations in capitalism and their institutional context, to the social, financial, and entrepreneurial aspects of the discussion. Among these chapters, the one on 'political dynamics of green transformations' provides elements that help to establish a theoretical framework for the underlying driving mechanisms. They include the centrality of dominant policy paradigms and the balance between positive and negative feedback mechanisms, the supportive and supporting institutions, and the relationships with environmental justice. The general considerations are illustrated by two sets of comparisons, one between Germany and the UK, and the other between China and India.

The concluding chapter addresses the pertinent question: 'Is there a fast track to green transformation?' The technology (e.g., comprehensive decarbonisation) is often available but this is insufficient to realise a fast transition. Understanding the politics of green transformation is a logical next step: transformations are above all a political task. Stakeholder alliances are at the same time an important condition and instrument. After all, there is no 'motorway' into a green future.

This book emerged from interdisciplinary discussions within the University of Sussex based the Centre for Social, Technological, and Environmental Pathways to Sustainability. This centre is also the physical and intellectual base of the three editors of this book. They are surrounded by a group of eight academic expert authors on the subject.

The publication is excellent in clarifying the concepts and practice of green transformations towards a more sustainable world. It provides insight in the necessary mechanisms and drivers of green transformation, which are unfortunately absent or weak in many countries. It does not present a generalised theory; rather it offers building stones and step-ups towards these transitions. It analyses them in terms of uncertainty and conflicting opinions. Examples of (international) policies illustrate the theory.

The book highlights the role of citizens as innovators, entrepreneurs, green consumers, and members of social movements. These groups will take advantage of reading it. Also, students and researchers in environmental studies, geography, international relations, political science, and development studies will take significant benefit from the approaches clarified by this excellent addition to Earthscan's Pathways to Sustainability series.

3 Towards Low Carbon Cities in China: Urban Form and Greenhouse Gas Emissions

by: Sun Sheng Han, Ray Green and Mark Y. Wang

Published 2015

by Routledge

2 Park Square Milton Park, Abingdon, Oxon X14 4RN, UK

and

by Routledge

711 Third Avenue, New York, NY 10017, USA, 10 chapters, 216pp

ISBN: 978-0-415-74331-0 (hbk)

ISBN: 978-1-315-81372-1 (ebk)

‘Green cities’ is a concept that resurfaced in the aftermath of the Rio +20 conference. Originally, ‘green cities’ were the urbanism reply converting negative characteristics of post-industrial cities into opportunities. It is a wide concept with a variety of interpretations, but usually including less air pollution and traffic congestion, progressive waste management, qualitative water supply, access to green areas, and densifying land use. It might include urban agriculture and, in port areas, green port management. As the consequences of climate changes are increasingly obvious, urban energy management and low carbon cities become imperative.

This book covers essential aspects of this latter subject area. It is on the relationship between urban form and greenhouse gas (GHG) emissions in four Chinese cities, of which two are metropolitan areas. Not only are GHG emissions studied at the mason-urban level, but also household carbon emissions are a core issue of the research reported. The results contribute to insight into the interwoven aspects of these elements in ‘low carbon cities’.

The book has ten chapters, of which the first is an introduction to the literature and offers an overview of the book. Chapter 2 is about GHG emissions in China in the context of developing local, national and international policies. It provides information on the multiple policies that China initiated. Chapter 3 explores the low carbon city concept and its development in China. It shows that a variety of national and local low carbon initiatives exist. It identifies the haphazardness of the actions and the lack of comprehensive planning as key limitations in making (more) progress towards less GHG emissions. Chapter 4 is the key to the book. It examines the relationship between urban form and GHG emissions. The results show the effects of family and house size and income on household energy use. The authors support the call for integrated land use and transport planning to achieve sustainable development. It calls for establishing new planning units that focus on reducing daily transport and household energy consumption.

Chapters 5 to 8 show results of the research on the relationship between urban form and CO₂ emissions in Beijing, Wuhan, Sian, and Shanghai. Also, carbon emissions in hot spot neighbourhoods of these case studies are addressed. The results point to the importance of traffic, especially big private cars, in carbon emissions. This should also be a main focus element for policies.

Chapter 9 is on household surveys in the relatedly smaller cities of Wuhan and Xian. The results provide clear indications of the willingness of the Chinese public to reduce energy use and carbon emissions. The data offer keys to change people’s behaviour in reducing GHG emissions.

The concluding chapter 10 summarises the findings and indicates essentials of the pathways towards low carbon cities. Key elements include: the important role of households in urban carbon emissions; the relationships between households and other stakeholders; and those between urban form and carbon emissions. The final section calls for proper planning of the built environment to de-carbonise cities.

The book is to a large extent the report of four year multidisciplinary research by the University of Melbourne (Australia) and Chinese universities. The editors are the project leaders. The book offers a nice, inspiring, and methodologically correct example of contemporary research linking climate changes (GHG emissions) with urbanism (urban households and types of cities). As such, it offers most useful case studies for classes on multi-disciplinary research and master thesis works. The results have application potential. Also, the smooth scientific logic and structure, the illustrations, the information-rich tables, and the references contribute to its use in class and during practical exercises. It is targeted to scholars and students in urban planning and management and in interdisciplinary environmental studies on human ecology, as well as to urban policy makers and planners who are working towards sustainable development, and the low carbon cities of the future.

4 The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change and the Conflicts of Development

by: Marcus Taylor

Published 2015

by Routledge

2 Park Square Milton Park, Abingdon, Oxon X14 4RN, UK

and

by Routledge

711 Third Avenue, New York, NY 10017, USA, 9 chapters, 206pp

ISBN: 978-0-415-70381-9 (hbk)

ISBN: 978-0-203-76248-6 (ebk)

Climate change and adaptation is a process of transformation in social and environmental systems that can safeguard against current and future adverse impacts of climate change. The more the world's response to climate changes moves from limiting GHG emissions to adaptation, the more adaptation is considered an issue on its own.

This book considers that adaptation to climate changes and the meteo-physics behind it will be an integral element of the social organisation in the future. In particular, it shows the importance of this integration for development in agricultural areas threatened by extreme weather conditions. It offers a politico-social critique of the concept of climate change adaptation within the context of international development.

Apart from the preface, which summarises a 'critique of climate change adaptation' and its marriage with development, the book is structured in nine chapters. The first three chapters deal with the frontiers of political ecology in a context of climate changes, the social impacts, and adaptation as a new, emerging political domain of development practice. They form the analytical core of this book. They advocate not to separate ('dichotomise') climate and society – the two should be dealt with in an integrated way because humans do not stand outside their environment.

Chapters 4 and 5 are about power, inequality, vulnerability, capital and agrarian transformations. They consider climate change as intrinsically a political process and read it through the lens of political ecology. They investigate impacts in climate change affected regions in which the changes in food production affect both human livelihoods and their socio-ecological foundations in an economic context. Effects of climate changes are situated in the complicity of uneven commercialisation of agriculture, changing property relations, capital accumulation, state formation, environmental engineering, migration, technological change, and political movements. This framework is used to analyse three case studies on agrarian transformation in Central-South Asia. The first of these chapters (6) is on the devastating floods of 2010 to 2011 in Pakistan. The discussion shows how climate change became a new field for political contestation, in which different stakeholders submit visions of change, security, justice and efficiency on adaptation. The second case is described in chapter 7, where agrarian environments on the Deccan plateau (India) are examined. The Deccan plateau is prone to severe droughts. The case illustrates how agro-ecological techniques adapting to drought can only be successful if framed in their wider socio-ecological context. The last case (chapter 8) is about pastoralists in Mongolia. In this land of harsh climate extremes, the tensions between vulnerable herder livelihoods and the increasingly capricious steppe climate are studied. Also, the (much milder) impacts of climate changes on minerals mining and the tensions they cause with the herders are discussed.

The concluding chapter stresses looking at climate change as an intertwining of labour control of productive assets and uneven distributions of consumption and the policy consequences thereof. The critical analysis of the book shows how thinking 'beyond adaptation' (looking to adaptation in its wider social context) becomes urgently imperative.

Reading this book engenders mixed feelings. No doubt, the wide interdisciplinary framework in which climate change social impacts are situated is attractive and revealing. This provides the book with a unique place in the rapid growing climate change policy literature. Within this wide scope, the book addresses a wide array of people involved in environmental and ecological studies, geography, politics and development disciplines. Also, the coupling of theory formation with most illustrative empirical studies is part of the attraction of this publication. The impressive series of arguments definitely will enrich the 'adaptation debate'. On the other hand, the writing style is hermetic jargon confined to political and social sciences, rather than the clever and accessible language most of the previously mentioned target readers are familiar with.

The author, Markus Taylor, is a professor of Global Development and Environmental Studies at Queen's University (Canada). This affiliation characterises at the same time the scope of this critical discussion on climate change adaptation and development, livelihoods and poverty.

Book Review

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Environmental Management of Seaports in Vietnam

by: Tran Dinh Lan (leading), Luc Hens, Cao Thi Thu Trang and Do Thi Thu Huong

Published 2014

by Publishing House for Science and Technology

18 Hoang Quoc Viet Road, Cau Giay, Hanoi, Vietnam, 317pp

ISBN: 9786049132193

Ports and port areas are essential knots in globalising and expanding economies, but also have major impacts on their environment. They use vast and expanding areas; they handle dangerous and environmentally impacting products such as oil and other chemicals; they are at risk of incidents such as fires, explosions and floods; they consume resources and produce waste; they have to organise mobility both within the port and with their hinterland; their operations affect the quality of air, water and (water-)soil. Some of these issues are faced by many organisations using environmental resources and causing pollution (and consequently show generic aspects), whereas others, such as pollution by tributyltin or cleaning oil tanks, are port-specific.

Addressing these issues showed fundamental changes during the last decades. Ports developed a series of strategies and instruments for environmental management. This book provides an up-to-date overview of this rapidly evolving area at the interface between science, engineering and management.

The book is structured in three parts. The first one provides an overview of the instruments that ports use for their environmental management. Five chapters respectively deal with planning, environmental impact assessment (EIA), strategic environmental assessment (SEA), environmental management systems (EMS) and their certification (ISO14001, EMAS), and sustainability assessment. The chapters show how ports adopted general instruments for environmental management (such as EIA, EMSs, and planning) and adapted them to their specific needs. The theory is illustrated by examples from Hai Phong, Da Nang, Ho Chi Minh City (Viet Nam), Flanders (Northern Belgium), and ports worldwide. Of particular interest is the chapter on sustainability assessment. This is not only the most recent addition to the assessment of prevention strategies, but also the approach integrates environmental, social, and economic aspects of the questions that port managers increasingly frequently face. The chapter not only clarifies the concept of SA and reviews its main procedures and methods; it also dissects its complementary role in strategic assessment and the potential of its current and future use in international port developments.

The second part entails three chapters analysing the environmental problems and their management in three main port areas in Vietnam. Hai Phong is the historical gateway to Vietnam's capital Hanoi, and the main port in the north of the country. The Ba Ria – Vung Tau area links Ho Chi Minh City with the sea. It replaces gradually the downtown Saigon port and is structured as a chain of inland ports, each with a specialised function. The port area of Da Nang in Central Vietnam is the most recent addition to the country's main ports. Of interest is that the local authorities found that a main port hardly fits into a post-modern smart city, and decided to move the activities to a new area, which is closer to the sea. It is most interesting reading these chapters, in which environmental problems are identified in these ports, and how they are mitigated, using a combination of science, technology, management, and policy.

The third section is on stakeholder participation and international collaboration on port management. Chapter 9 deals with involving the relevant social groups, and the next chapter is on international networking. It lists international projects in Vietnam during the last 15 years and shows the way towards structured international networks on the subject.

The concluding chapter, by Dr. Tran Dinh Lan, the lead editor of this book, summarises the state of the art, using a SWOT analysis. He convincingly points to current realisations and opportunities for strengthening environmental protection in and around ports.

The individual chapters in this book are worth reading on their own, but its importance covers a wider scope. This is the first book in the international literature reviewing environmental management for ports systematically and in depth. It is an important step to theory formulation. It combines research with hands-on applications. It documents, illustrates and contributes interdisciplinary approaches that are badly needed in environmental science and management. It might offer a most valuable background text to networks on environmental management for ports, such as PSHEMS (<http://www.pemsea.org>) in South-East Asia.

The book has its origin in two decades of collaboration between the Haiphong-based Institute of Marine and Environmental Resources (IMER), the Vietnam Academy of Science and Technology (VAST), the marine and inland waterway mobility administrations in Vietnam and in Belgium. This is equally the background of the ten authors of the book, who represent a variety of knowledge and experience in (human) ecological science and management.

This book deserves a wide reading audience. It addresses directly port managers, students, researchers, and decision makers. But the publication is also most relevant in the context of an economically most important sector that is often overlooked in environmental status studies. In this way, the book is appealing to everyone concerned about the quality of the environment on the planet and how to deal with it.

References

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